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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/419,798      | 10/18/1999  | TOSHIHIKO MIURA      | 1004.1063/JD        | 1817             |

21171 7590 05/20/2004

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EXAMINER

JACKSON, MONIQUE R

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1773

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/419,798             | KAWASAKI ET AL.     |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Monique R Jackson      | 1773                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/8/04 has been entered.
2. New Claim 7 has been added. Claims 1-7 are pending in the application. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 103*

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al in view of Nakayama et al (USPN 5,154,978) for the reasons recited previously and restated below.
4. Sagawa et al teach the production of a resin-bonded rare-earth magnet coated with a powder layer and resin layer wherein the magnet is formed from Fe-Nd-B powder having a particle size of 100µm or less mixed with an epoxy resin and compacted under pressure to produce a resin-bonded magnet (Abstract; Example 5.) The magnet is coated with a resin and a compacted powder layer, wherein the resin is a thermosetting resin and the grain size of the powder material (*filling material*) depends of the size of the work piece to be coated, the thickness of the coating, and the material of the powder, and the grain size is usually within a range from 0.05 to 500µm, and more preferably 0.1 to 50µm wherein the finer the powder material is, the smaller the striking force is and the surface roughness is lessened (Col. 6, lines 5-

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12; Col. 13, lines 53-69.) The resin layer is preferably applied first to bind the powder layer to the surface of the work piece however it is possible to impregnate the resin from outside the powder coating into the continuous clearances of the powder skeleton structures (Col.8, lines 1-13.) Sagawa et al teach that **the powder material and resin are forced into the pores of the resin-bonded magnet, thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating** (*hence the powder material directly fills in the depressions along with the resin*; Col. 10, lines 5-23.) A protective resin coating may also be applied on the surface of the coating to enhance the strength and corrosion resistance of the entire coating and smoothen and enhance the appearance of the coating surface wherein the protective coating layer comprises the same resin as the coating layer such as a thermosetting resin and has a thickness desirably from 0.5 to 300 $\mu$ m (Col. 9, lines 20-46.) **It is particularly noted that Sagawa et al specifically teach that the powder layer can be applied first followed by impregnation of the resin layer, that the powder material and resin are forced into the pores of the resin-bonded magnet thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating** (*a filling material used to fill in depressions on a surface of said magnet and fixed with thermosetting resin*) and that a protective resin coating may also be applied on the surface of the coating to enhance the strength and corrosion resistance of the entire coating and smoothen and enhance the appearance of the coating surface wherein the protective coating layer comprises the same resin as the coating layer such as a thermosetting resin (*a corrosion inhibiting coat made from a synthetic resin applied to the surface*) and has a thickness desirably from 0.5 to 300 $\mu$ m.

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5. Though Sagawa et al teach that the finer the powder materials, the smaller the striking force and lower the surface roughness, and that the protective coating assists in smoothening the surface of the magnet, Sagawa et al do not teach the surface roughness of the magnet as instantly claimed. However, it is noted that with regards to resin-bonded magnets, the surface roughness is an important characteristic of the performance of the magnet with regards to corrosion resistance of the magnet as taught by Nakayama et al wherein an improvement in corrosion resistance can be obtained by reducing the surface roughness of the magnet (Col. 2, lines 50-60.) Nakayama et al further teach that a surface roughness of about 1 micron or less is preferred (Col. 2, lines 54-60.) Therefore, one having ordinary skill in the art at the time of the invention would have been motivated to provide the surface of the magnet taught by Sagawa et al with a small surface roughness, preferably less than one micron, because, as taught by Nakayama et al, a decrease in surface roughness provides improved corrosion resistance. Alternatively, it would have been obvious to one having ordinary skill in the art to determine the optimum surface roughness to provide desired improvement in corrosion resistance for the invention taught by Sagawa et al utilizing routine experimentation to determine the optimum powder material size to provide the desired surface roughness.

6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sagawa et al in view of Nakayama et al and in further view of Strnat for the reasons recited previously and restated below.

7. The teachings of Sagawa et al in view of Nakayama et al are discussed above. Though Sagawa et al teach particle sizes of the metal alloy powder and the filler material particles that encompass or overlap the instantly claimed ranges, Sagawa et al do not specifically teach

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limiting the particle size of the metal alloy powder and the filler material particles to 20-300 $\mu$ m and 0.1-15 $\mu$ m, respectively. Sagawa et al further teach that the particle size of the powder material is based on the size of the work piece, the thickness of the coating, and the material of the powder and is also a result-effective variable that affects the surface properties of the resulting coated product. Further, in terms of the metal alloy powder, Strnat teaches that the particle size of the metal alloy particles used to form a rare-earth magnet body may vary based on the particular metal alloy and that typically the alloys are used in the form of powders having a particle size between 1 and 50 $\mu$ m and up to 100 $\mu$ m or more based on the particular metal alloy and desired magnetic properties (4:1-54.) Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize routine experimentation to determine the optimum particle size for the powder material as taught by Sagawa et al and optimum particle size for the metal alloy powder for the magnet body as taught by Strnat et al based on the particular powder materials utilized for the invention taught by Sagawa et al given that the particle size is a known result-effective variable.

#### ***Response to Arguments***

8. Applicant's arguments filed 3/8/04 have been fully considered but they are not persuasive. The Applicant first argues that Sagawa does not teach a particle size of 0.1-15 microns as instantly claimed however as noted above, Sagawa clearly teaches that the powder material may has a grain size (particle size) of 0.05 to 500 microns, more preferably 0.1 to 50 microns, which includes the instantly claimed particle size range, and wherein Sagawa further teach that the finer the powder material is, the smaller the striking force is and the surface roughness is lessened thereby providing motivation for one skilled in the art to determine the

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optimum powder grain or particle size to provide the desired surface roughness or smoothness (Col. 6, lines 5-12 and Col. 13, lines 53-68.) The Applicant further argues that the references do not teach that a reduced surface roughness is achieved as in the instant invention however the Examiner notes that Sagawa clearly teaches that the powder material and resin fill the pores of the magnet body which results in reduced surface roughness and further that Sagawa teach that the finer the grain size, the lesser the surface roughness. Sagawa also teaches that the resin layer and protective layer also reduce the surface roughness of the coated magnet. In terms of new Claim 7, as discussed above, Sagawa clearly states that the **powder material and resin are forced into the pores of the resin-bonded magnet thereby effectively sealing the pores on the surface of the magnet and providing an improved corrosion resistant surface coating**, hence the powder material directly fill the depressions or pores on the surface of the magnet body.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on 571-272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Monique R. Jackson  
Primary Examiner  
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May 17, 2004